

China passes the EU in High-tech exports

The value of high-tech exports worldwide increased by an average of 5% a year between 2001 and 2006. This increase was mostly due to the rise of Chinese exports in world trade. Although in 2005 the EU was the leader in high-tech exports, China took over the lead in 2006 followed by the United States, the EU-27 and Japan.

At EU-level, four countries make a significant contribution to the share of world exports in high-tech products: Germany is in front, followed by the United Kingdom, France and the Netherlands.

In 2006, as in previous years, “Electronics-Telecommunication” accounted for the largest share of high-tech imports and exports, closely followed by “Computers-Office Machines”.

Taken together, both groups accounted for 67% of the world's high-tech trade.

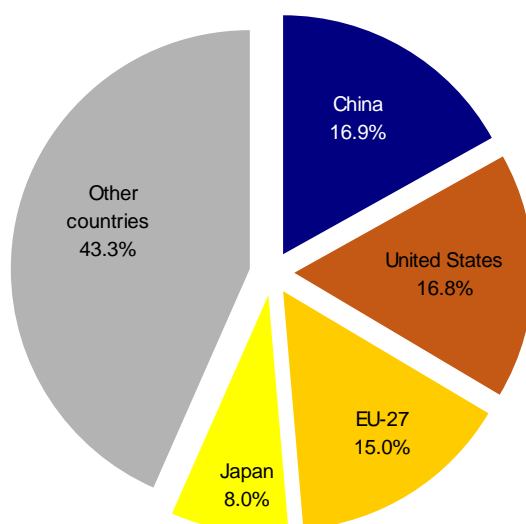
The aim of this issue is to present the world shares of high-tech trade, focusing in particular on high-tech trade by main product groups.

China takes the lead in high-tech exports

Figure 1 presents the shares of high-tech exports in 2006.

Four economies together accounted for more than half of high-tech exports worldwide: China and the United States were the main exporters of high-tech products, with shares of 16.9% and 16.8% respectively, followed by the EU-27 (15.0%) and Japan (8.0%).

Figure 1: World market shares of high-tech exports, EU-27, United States, Japan and China – 2006



EU-27: excluding intra-EU trade
 CN: excluding Hong Kong

Source: Eurostat's high-tech statistics

Figure 2 traces the development of the four main economies in terms of exports of high-tech products between 1995 and 2006.

China registered a continued increase throughout the review period, picking up considerable speed since the turn of the century. Over the past 11 years, its share in high-tech exports worldwide has increased almost eightfold. In 1995, China accounted for 2.1% of global high-tech exports, representing in real terms around 8% of the US trade value. In 2006, Chinese exports in real terms outpaced those of the US and the EU.

Over the past decade, the Chinese economy became an important partner in global trade. Regarding high-tech products, Chinese exports grew more rapidly than those of the EU and US. In particular Chinese trade in

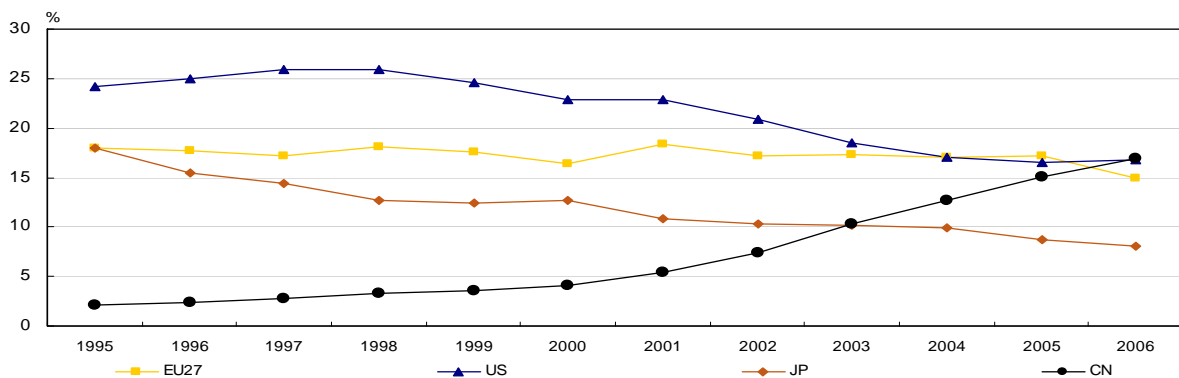
“Computers-Office machines” and “Electronics-Telecommunication” grew particularly fast. As these two groups account for almost two thirds of high-tech exports worldwide, China has accordingly taken the lead in the export of high-tech products as a whole.

Until 2003, the United States was the leading exporter of high-tech products. This share gradually declined as Chinese exports grew, but since 2004 it has stabilised at around 17%.

EU high-tech exports remained relatively stable between 1995 and 2006, at around 17%, but in 2006 this share dropped to its lowest level in the period under review.

The fourth main economy, Japan, lost ground steadily by 1 to 2 percentage points a year. Its share fell from 18% of world high-tech exports in 1995 to 8% in 2006.

Figure 2: World market shares of high-tech exports, EU-27, United States, Japan and China, 1995 to 2006



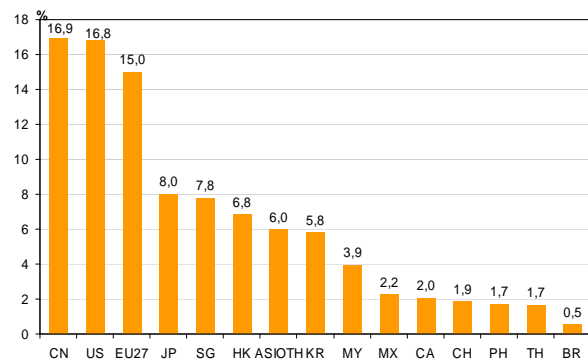
EU-27: excluding intra-EU trade
CN: excluding Hong Kong

Source: Eurostat's high-tech statistics

As shown in Figure 3, a mere 15 exporters¹ accounted for 97% of world exports in high-tech products in 2006.

Apart from the four leading world economies, 10 other countries registered shares of high-tech exports above 1%. Singapore and Hong Kong, accounted for 7.8% and 6.8% respectively. This high performance of relatively small Asian countries was driven by the important shares of re-exports. In Singapore re-exports account for nearly half of global trade². Hong Kong, another leading exporter of high-tech goods, also owes its rank to the hub effect and remains one of the leading International trading hubs for high-tech products³.

Figure 3: World market shares of high-tech exports, 15 main exporters – 2006



EU-27: excluding intra-EU trade
CN: excluding Hong Kong

Source: Eurostat's high-tech statistics

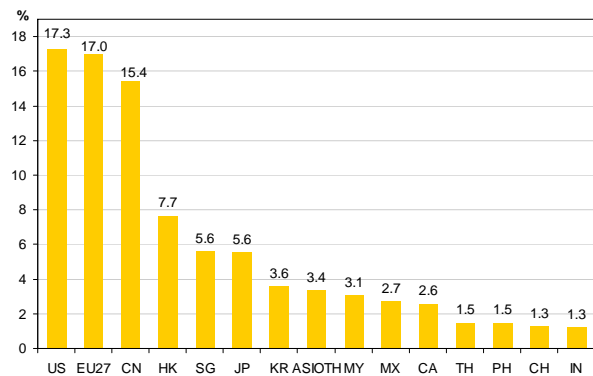
Figure 4 reveals that, in 2006, 15 importers accounted for 90% of total high-tech imports, with the United States (17.3%), the EU-27 (17.0%), China (15.4%) and Hong Kong (7.7%) at the top of the list. Singapore and Japan followed with shares above 5%. The high shares recorded by Hong Kong and Singapore can be explained by the large number of transiting high-tech products.

¹ See methodological notes on page 7 for more information about countries and country abbreviations.

² Source: <http://www.yearbook.gov.hk/2007/en/index.html>

³ Source: <http://app.mti.gov.sg/default.asp?id=148&articleID=17562>

Figure 4: World market shares of high-tech imports, 15 main importers – 2006



EU-27: excluding intra-EU trade
CN: excluding HK
Source: Eurostat's high-tech statistics

In absolute terms, China and the United States exported high-tech products worth a total of EUR 218bn and EUR 216bn respectively in 2006, followed by the EU-27 (EUR 193bn) and Japan (EUR 103bn) (see Table 5). In Singapore, exports amounted to almost EUR 100bn.

Table 5: High-tech trade in EUR million and as a percentage of total trade in 2006 and AAGR 2001–2006, EU-27 and 20 main exporters

	Exports			Balance	Imports		
	Million EUR	as a % of total exports	AAGR 2001-2006		Million EUR	as a % of total imports	AAGR 2001-2006
EU-27	192 992 i	16.6 i	0.5 i	-34 468 i	227 460 i	16.8 i	-0.4 i
CN	217 632	28.2	31.5	11 645	205 987	32.7	25.2
US	215 780	26.1	-1.6	-15 742	231 521	15.1	-1.0
JP	103 221	20.0	-1.5	28 869	74 352	16.1	0.6
SG	99 827	46.1	7.2	24 506	75 321	39.6	6.4
HK	87 666	34.1	10.8	-14 749	102 415	38.3	9.6
ASIO	76 671	43.0	6.8	31 322	45 349	28.1	1.8
KR	74 479	28.7	10.5	26 512	47 967	19.5	6.2
MY	50 726	39.6	2.0	9 341	41 385	39.6	4.8
MX	28 616	14.4	-3.0	-8 077	36 693	18.0	0.7
CA	26 302	8.5	-2.7	-7 999	34 300	12.3	-3.0
CH	23 968	20.4	4.3	6 461	17 507	15.5	0.9
PH	22 036	58.4	-1.3	2 332	19 705	45.8	2.9
TH	21 599	20.8	4.9	1 386	20 213	19.7	3.0
BR	6 809	6.2	-0.1	-5 308	12 117	16.7	0.2
ID	4 874	6.1	-0.5	1 671	3 203	6.6	14.2
IL	4 469	12.0	-10.1	-459	4 928	12.9	-6.7
IN	4 021	4.0	9.6	-12 831	16 852	11.4	28.1
RU	3 889	1.6	1.3	-10 338	14 227	13.0	23.2
NO	2 886	3.0	2.1	-3 056	5 942	11.6	0.5
AU	2 744	2.8	-1.8	-13 635	16 379	15.5	6.3

EU-27: excluding intra-EU trade
CN: excluding HK
Source: Eurostat's high-tech statistics

Looking at the high-tech trade balance, 'Other Asia, n.e.s.' registered the largest surplus, with EUR 31bn. Japan, South Korea and Singapore followed close behind. On the other hand, the EU-27 and the United States recorded the biggest deficits in high-tech trade, with EUR 34bn and EUR 16bn respectively. However, viewed in relative terms as an import/export ratio, the deficit was highest in Australia, India and Russia, where import volumes were more than three times higher than exports.

Between 2001 and 2006, the annual average growth rates (AAGR) in high-tech exports were strongest in Asian countries, with China in the lead (+31%). High-tech exports in Hong Kong, South Korea, India,

Singapore and 'Other Asia, n.e.s.' grew by 7% to 11% a year on average.

In contrast, high-tech exports fell by an average of 10% a year in Israel. The US and Japan — two of the biggest exporters — also registered a slight decrease (around -1.5%), while growth in EU high-tech exports was positive, at 0.5%.

Asian countries were also in the lead when it came to the share of the high-tech exports among total exports: the Philippines ranked first (58%), followed by Singapore (46%). In the US, Japan and China, high-tech exports accounted for at least one fifth of all exports.

In 2006, high-tech exports in the EU accounted for 16.6% of total exports. In spite of a drop in high-tech imports (-0.4%), the overall high-tech trade balance was negative; the gap between imports and exports widened even further relative to 2005, as there was no increase in EU exports in 2006.

Table 6: High-tech trade in EUR million and as a percentage of total trade in 2006 and AAGR 2001–2006, EU-27 and selected countries

	Exports			Balance	Imports		
	Million EUR	as a % of total exports	AAGR 2001-2006		Million EUR	as a % of total imports	AAGR 2001-2006
EU27	192 992 i	16.6 i	0.5 i	-34 468 i	227 460 i	16.8 i	-0.4 i
BE	19 402	6.6	0.3	-905	20 307	7.2	-1.2
BG	392	3.3	31.2	-891	1 284	8.3	12.1
CZ	9 629	12.7	23.3	-1 184	10 813	14.6	12.3
DK	9 400	12.8	3.1	270	9 129	13.4	3.3
DE	124 098	14.1	4.2	13 606	110 492	15.3	2.2
EE	617	8.0	-0.5	-457	1 074	10.0	12.8
IE	25 119	29.0	-7.8	10 045	15 074	25.9	-7.5
EL	943	5.7	3.5	-3 013	3 966	7.8	-0.1
ES	8 382	4.9	1.1	-17 401	25 783	9.8	7.1
FR	70 627	17.9	-5.2	7 223	63 405	14.7	-6.1
IT	21 081	6.3	-2.1	-11 671	32 752	9.3	-0.1
CY	227	21.3	63.5	-327	554	10.0	3.9
LV	206	4.2	32.7	-486	692	7.5	15.8
LT	524	4.6	30.3	-548	1 071	6.9	14.5
LU	7 418	40.7	19.5	358	7 060	33.4	14.7
HU	12 182	20.3	11.7	1 351	10 831	17.4	7.0
MT	1 159	54.6	-0.4	162	997	31.5	-1.2
NL	67 464	18.3	3.3	4 877	62 587	18.9	3.5
AT	12 165	11.2	1.0	-271	12 435	11.4	-0.3
PL	2 748	3.1	20.4	-6 585	9 332	9.2	7.3
PT	2 413	7.0	5.2	-3 219	5 631	10.6	2.2
RO	994	3.8	9.5	-2 798	3 792	9.3	15.3
SI	863	4.7	11.5	-492	1 354	7.0	7.1
SK	1 811	5.4	32.4	-2 883	4 694	13.1	26.7
FI	11 142	18.1	1.8	3 360	7 783	14.1	3.2
SE	15 767	13.4	5.6	2 502	13 265	13.1	2.9
UK	94 634	26.5	0.8	19 077	75 556	15.8	-2.6
IS	246	8.9	53.2	-392	638	13.3	15.2
NO	2 884	3.0	4.3	-3 051	5 935	11.6	0.6
CH	25 007	21.3	5.3	7 216	17 791	15.8	1.3
HR	561	6.8	3.8	-884	1 445	8.4	27.7
MK	15	0.8	5.5	-170	185	6.2	26.2
TR	359	1.4	-20.6	-3 734	4 093	9.4	-5.5

EU-27: excluding intra-EU trade
Exception to the reference period: 2002-2006: MK
MK: see more in methodological notes
Source: Eurostat's high-tech statistics

Looking at the individual performances of the EU Member States (Table 6), only Estonia, Ireland, France, Italy and Malta reported a decrease in their exports of high-tech products between 2001 and 2006.

Conversely, many new Member States experienced rapid growth in high-tech exports, most notably Cyprus (+63%), followed by Bulgaria, Latvia, Lithuania and Slovakia (all over 30%). However, except for Hungary and Malta, the overall balance of high-tech trade in the new Member States was negative.

In 2006, the other net exporters of high-tech products alongside Hungary and Malta were Denmark, Germany, Ireland, France, Luxembourg, the Netherlands, Finland, Sweden and the United Kingdom, with the highest export/import ratio being recorded by Ireland and Finland. Switzerland was also a substantial net exporter of high-tech products.

The largest high-tech trade deficits, if taking the import/export ratio, were observed in the former Yugoslav Republic of Macedonia, Turkey, Greece, Romania, Poland, Latvia, Bulgaria and Spain, where the import values were more than three times greater than the export values.

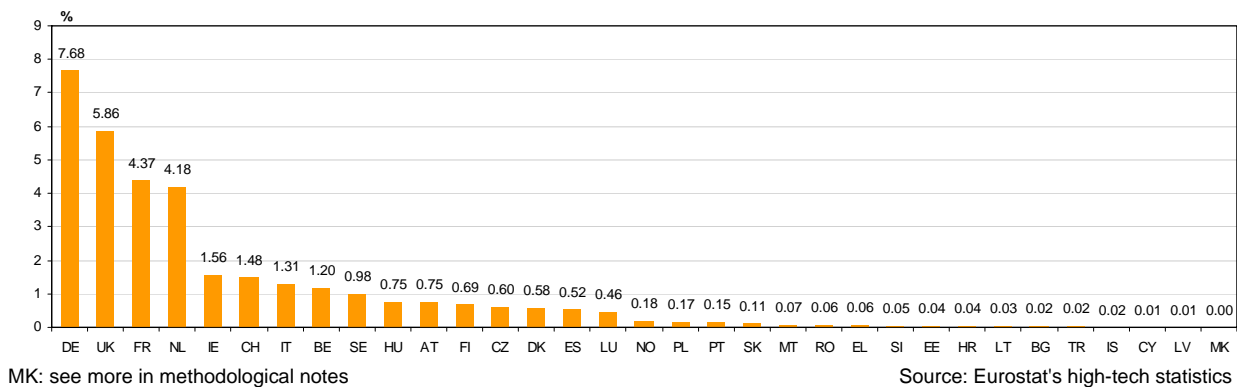
The share of high-tech exports was highest in Malta, where they represented over 50% of total exports, followed by Luxembourg (41%) and Ireland (29%). In the United Kingdom, Cyprus, Switzerland and Hungary,

high-tech exports accounted for more than 20% of national exports. This share was slightly above the EU average (16.6%) in the Netherlands, Finland and France. The lowest shares (less than 4%) were recorded in Romania, Bulgaria, Poland, Norway, Turkey and the former Yugoslav Republic of Macedonia.

Looking at the situation overall (see Figure 7), seven EU Member States registered high-tech export shares of more than 1%. Germany was in the lead, with close to 8% of the global market, followed by the United Kingdom, France and the Netherlands (the latter's high share being partly explained by the Rotterdam effect)⁴.

⁴ Goods arriving in the port of Rotterdam and destined for the rest of EU are recorded as Dutch imports and subsequently as dispatches from the Netherlands to another EU Member State.

Figure 7: World market shares of high-tech exports, EU-27 and selected countries – 2006



In 17 Member States intra-EU trade represented over 65% of all high-tech exports, with Luxembourg, Slovakia, Greece and the Czech Republic sending 80% or more of their high-tech exports to another EU

Member State. In contrast, more than half of high-tech exports from Sweden, Slovenia, Finland, Malta and Portugal were to non-EU countries.

Figure 8: Share of intra-EU exports of high-tech products among total exports, EU-27 and selected countries – 2006

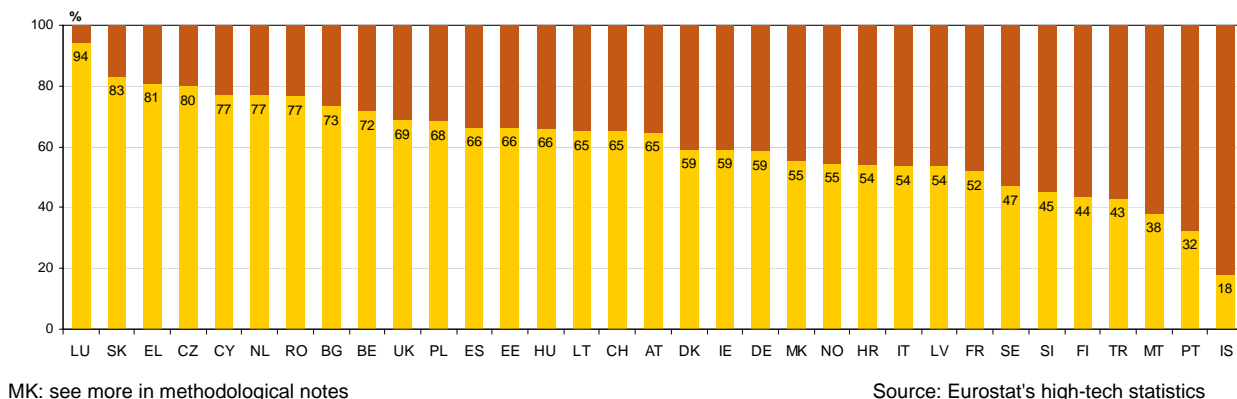


Table 9: World market shares of high-tech exports by high-tech groups of products, EU-27, United States, Japan and China – 2006

High-tech groups	Total exports of high-tech products		of which (%)				
	in Million EUR	annual average growth rate 2001-2006	EU-27	US	JP	CN	OTHERS
Aerospace	109 425	-2.5	32.8	46.7	1.2	0.7	18.6
Armament	6 236	2.4	24.3	48.4	1.1	0.5	25.8
Chemistry	32 155	5.5	21.3	17.3	4.6	14.5	42.2
Computers-Office machines	298 243	2.9	8.0	10.8	5.8	33.4	42.0
Electrical machinery	46 328	9.7	10.0	12.9	14.6	9.0	53.5
Electronics-Telecommunication	562 814	6.1	10.5	12.1	9.1	16.0	52.4
Non-electrical machinery	36 775	3.1	27.6	27.8	17.9	2.0	24.7
Pharmacy	49 802	8.2	44.3	20.7	1.9	3.8	29.2
Scientific Instruments	145 100	8.4	20.1	20.4	12.1	10.8	36.6
Total high-tech	1 286 879	4.7	15.0	16.8	8.0	16.9	43.3

EU-27: excluding intra-EU trade
CN: excluding HK

Source: Eurostat's high-tech statistics

Table 9 presents the world shares of high-tech exports by groups of products in 2006 for the four main exporters.

The data reveal the prevailing weight of the “Electronics-Telecommunication” and “Computers-Offices machines” groups. Taken together, the two groups accounted for 67% of exported high-tech products. Significant shares were also recorded for “Scientific instruments” (11%), and “Aerospace” (9%). The remaining five groups of products accounted jointly for 13% of high-tech exports.

The annual average growth rates between 2001 and 2006 were positive for all groups of high-tech products except for “Aerospace”. The highest annual average growth rate was registered for “Electrical machinery” (9.7%). The export of “Scientific instruments” and “Pharmacy” products rose significantly as well, by around 8% each, and were also greater than the average growth of overall high-tech exports, standing at 4.7%.

Analysing the table in terms of the contribution by group of product for the four leading economies, a relatively high concentration of exports for “Aerospace”, “Armament”, “Non-electrical machinery” and “Pharmacy” was observed in two or three economies. Other groups of products registered a more even distribution of export shares, even though a dominance of China in “Computers-Office machines” can be observed.

Regarding the individual performance of the main exporters in each group of products, the EU accounted

for the highest share in “Chemistry” and “Pharmacy”, followed by the United States. The United States excelled in “Aerospace” and “Armament”, while the EU ranked second.

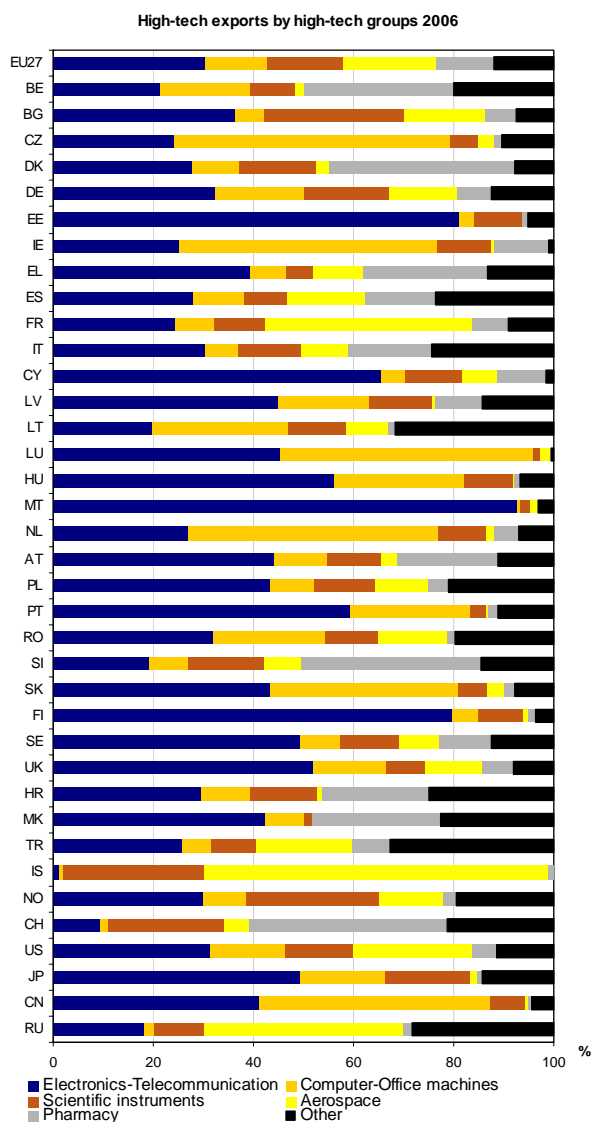
The EU and the US accounted for very similar shares in the export of “Scientific instruments” (e.g. medical equipment). Similar shares among the EU and US were also recorded for “Non-electrical machinery” (e.g. industrial machines).

Japan outranked its competitors in the export of “Electrical Machinery” (e.g. capacitors). China recorded the highest share in the exports of “Electronics-Telecommunication” and “Computers-Office machines”. As mentioned above these two groups account for more than two thirds of global high-tech exports. Because of this weighting effect, China ranked as the world’s largest exporter of high-tech products in 2006.

It should be noted that China’s exports in these two groups grew significantly between 2001 and 2006. This performance can be partly ascribed to China’s know-how acquired over the past decade through investment in R&D. As a result, the manufacturing and export of personal computers, fax machines, televisions, video cameras and sound equipment have grown very substantially in China.

Figures 10 and 11 present trade in high-tech products by group for all EU Member States and selected countries. This enables national specificities in high-tech trade to be analysed.

Figure 10: High-tech exports by high-tech groups of products, EU-27 and selected countries – 2006



EU-27: excluding intra-EU trade
CN: excluding HK

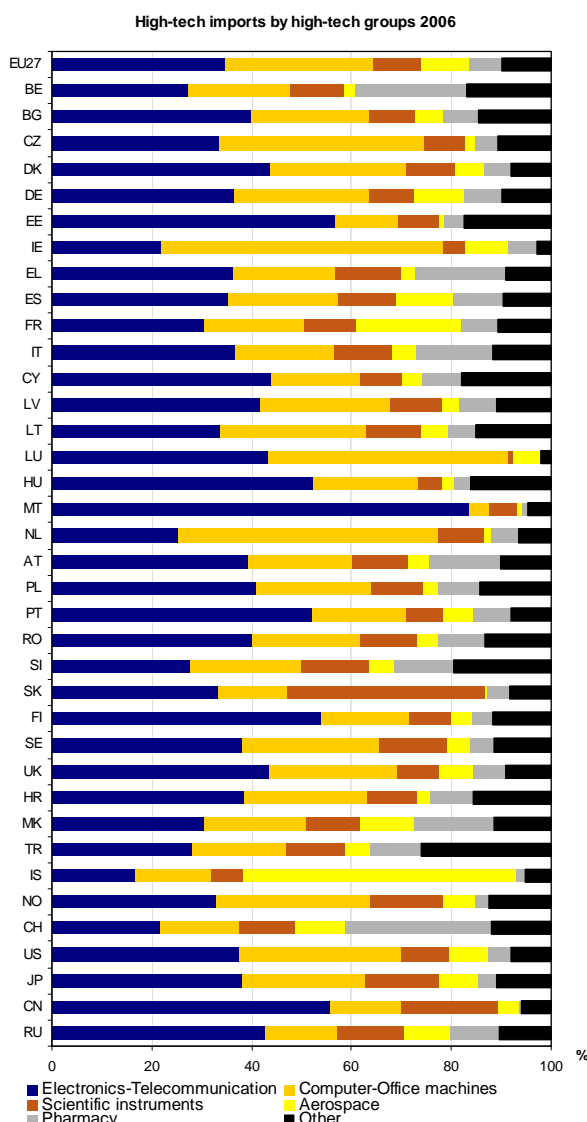
“Electronics-Telecommunication” was the most important group of exported products in many EU Member States, as well as in the US, Japan, Norway and candidate countries.

Luxembourg, Ireland, the Czech Republic, the Netherlands, Lithuania and China registered the highest export shares in “Computers-Office machines”, while “Pharmacy” featured prominently in Switzerland, Denmark, Slovenia and Belgium.

“Aerospace” was the largest export group in France, Iceland and Russia. It was the second largest product group in the US and Turkey, and represented a sizeable share of exports in Bulgaria, Spain, Germany and Romania.

The breakdown of high-tech imports by group of products was less diversified than that of high-tech exports.

Figure 11: High-tech imports by high-tech groups of products, EU-27 and selected countries - 2006



Source: Eurostat's high-tech statistics

With the exceptions of Ireland, the Netherlands, Slovakia, the Czech Republic, Luxembourg, Iceland and Switzerland, the largest shares of high-tech imports were recorded in the field of “Electronics-Telecommunications”.

“Computers- Office machines” made up the core of high-tech imports in Ireland, the Netherlands, Luxembourg and the Czech Republic. “Aerospace” accounted for a very substantial share of imports in Iceland and quite a significant share of high-tech imports in France.

Switzerland was the only country where “Pharmacy” accounted for the largest share of high-tech imports, while in Slovakia the main high-tech imports were in the field of “Scientific instruments”.

METHODOLOGICAL NOTES

High-tech products

In order to analyse the competitive and trade performance of high-tech trade markets, two main approaches are used to identify technology-intensive industries and products: the sectoral approach and the product approach.

In this publication, the product approach—which was devised to complement the sectoral approach—has been used. It paves the way to a more detailed analysis of trade and competitiveness. The product list is based on the calculations of R&D intensity by groups of products (R&D expenditure/total sales). Exports and imports of these products comprise high-tech trade.

High-technology groups of products include:

List of high-technology groups of products	SITC Rev. 3
Aerospace	7921+7922+7923+7924+7925+79291+79293 +(714-71489-71499) +87411
Computers-office machines	75113+75131+75132+75134+(752-7529) +75997
Electronics-telecommunications	76381+76383+(764-76493-76499)+7722+77261+77318+77625+ 77627+7763+7764+7768+89879
Pharmacy	5413+5415+5416+5421+5422
Scientific instruments	774+8711+8713+8714+8719+8721+(874-87411-8742)+88111+88121+88411+88419+89961+89963+89966+89967
Electrical machinery	77862+77863+77864+77865+77867+77868+ 7787+77884
Chemistry	52222+52223+52229+52269+525+531+57433+ 591
Non-electrical machinery	71489+71499+7187+72847+7311+73131+73135+ 73142+73144+ 73151+73153+ (7316-73162-73166-73167-73169) +73312+ 73314+73316+7359+73733+ 73735
Armament	891

EU totals

The EU totals reported refer only to extra-EU trade (i.e. they exclude intra-EU trade). This makes it possible to consider the EU as an entity and compare it with other countries. Nevertheless, figures for the individual EU Member States include intra-EU trade.

World market share

The world market share is a ratio in which the numerator is the sum of the total exports/imports of high-tech products from countries (entities). The denominator is

calculated as the sum of high-tech exports/imports from all countries/entities in the world. This means that the denominator for world market shares when counting EU as a single block is lower than the denominator when counting the EU Member States separately, because it excludes intra-EU trade.

Country abbreviations (Non-EU countries)

ASIOTH	Other Asia, n.e.s.	KR	South Korea
AU	Australia	MK	the Former Yugoslav Republic of Macedonia
BR	Brazil		
CA	Canada		
CH	Switzerland	MX	Mexico
CN	China	MY	Malaysia
HK	Hong Kong	NO	Norway
HR	Croatia	PH	Philippines
ID	Indonesia	RU	Russia
IL	Israel	SG	Singapore
IN	India	TH	Thailand
IS	Iceland	TR	Turkey
JP	Japan	US	United States

Other Asia, n.e.s. includes mainly Taiwan. China does not include Hong Kong. MK is a provisional code which does not prejudice in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

Annual average growth rates (**AAGR**) are calculated according to the formula:

$$AAGR_{T, T-n} = [(X_T/X_{T-n})^{1/n} - 1] \times 100$$

Where X = value
T = final year
n = period in years for which the annual growth rate is calculated

Source

All high-tech trade data are extracted from the **COMEXT** database — Eurostat's database of official statistics on EU external trade and trade between EU Member States.

Trade data reported by countries other than EU, EFTA and candidate countries are extracted from the UN Statistics Division's **Comtrade** database and included in the **COMEXT** database as a separate dataset.

This trade includes re-exported imports. That means some countries show large figures due to that a large number of products pass through the country and is counted as both imports and exports.

It should therefore be noted that the data used in this publication originate from two different sources with partly differing methodology. For more information see:

http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/ex t_base.htm





Further information

Data: [Eurostat Website: http://ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)

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